

AMSAT News Service Weekly Bulletins

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AMSAT NEWS SERVICE

ANS-352

ANS is a free, weekly, news and information service of AMSAT North America, The Radio Amateur Satellite Corporation. ANS reports on the activities of a worldwide group of Amateur Radio operators who share an active interest in designing, building, launching and communicating through analog and digital Amateur Radio satellites.

Please send any amateur satellite news or reports to:
ans-editor@amsat.org

In this edition:

- * Keep Amateur Radio in Space: Project Fox-1 Fundraising Campaign
- * ARRL Teachers Institute Plans Satellite Demo on December 20
- * AMSAT Awards
- * This Week 50 Years Ago: OSCAR 1 in Orbit
- * Silent Key: Ignacio Martinez, CE2MH, President of AMSAT-CE
- * N1JEZ Adapts AMSAT-UK FUNcube Dongle as SDR Panadapter
- * Soyuz Preparations Continue for Three Ham Crew Launch to ISS
- * UNISEC Announces Second Micro/Nano-Satellite Technology Idea Contest
- * Satellite Shorts From All Over
- * Got CubeSat? ESA January Vega Launch to Fly 6 More

SB SAT @ AMSAT \$ANS-352.01

Keep Amateur Radio in Space: Project Fox-1 Fundraising Campaign

AMSAT News Service Bulletin 352.01

>From AMSAT HQ SILVER SPRING, MD.

December 18, 2011

To All RADIO AMATEURS

BID: \$ANS-352.01

Letters mailed to all AMSAT members this week kicked off the Project Fox fundraising campaign. "Given the sad news on AO-51," AMSAT President Barry Baines, WD4ASW, said, "we highlighted at the recent 2011 Symposium that AMSAT is actively developing Fox-1, a new spacecraft that is designed to replace AO-51. Fox-1 development now takes on a great sense of urgency."

AMSAT Vice-President of Engineering, Tony Monteiro, AA2TX says, "Fox-1 will advance single-channel FM repeater satellite operation beyond the experience of AO-51. It will advance AMSAT to the next generation of AO-51 class satellites."

Fox-1 is designed for longer operational life with these features:

- + Fox-1 is designed to operate in sunlight without batteries once the battery system fails. This applies lessons learned from AO-51 and ARISSat-1 operations.
- + In case of IHU failure Fox-1 will continue to operate its FM repeater in a basic, 'zombie sat' mode, so that the repeater remains on-the-air.
- + Fox-1 is designed as the immediate replacement for AO-51. Its U/V

(Mode B) transponder will make it even easier to work with modest equipment.

- + From the ground user's perspective, the same FM amateur radio equipment used for AO-51 may be used for Fox-1.
- + Extending the design, Fox-2 will benefit from the development work of Fox-1 by adding more sophisticated power management and Software Defined Transponder (SDX) communications systems.

Barry concluded, "AMSAT's ability to provide a replacement spacecraft and get it launched is dependent upon the active support of donors who wish to see Fox-1 fly."

Several opportunities to make your donation to keep amateur radio in space include:

- + Return the form sent with the letter to reply with your donation for the Fox-1 Project.
 - All donations over \$40 will receive a Fox pin.
 - Donations of \$120 or more qualify you for AMSAT President's Club
- + Call Martha at the AMSAT Office +1-888-FB AMSAT (1-888-322-6728)
- + Paypal donation widget on the main page at: <http://www.amsat.org>
- + Paypal donation widget for Project Fox at:
<http://www.amsat.org/amsat-new/fox/>
- + You can also go to the Paypal site and send your donation to martha@amsat.org.
- + The AMSAT Store: <http://www.amsat-na.com/store/categories.php>

On November 15 AMSAT submitted a proposal to NASA for their CubeSat Launch Initiative, also known as the "Educational Launch of NanoSat" (ELaNa) program. NASA selects projects that they deem to have merit in support of their strategic and educational goals. Projects that are selected will be able to enter into a collaboration agreement where NASA will cover the integration and launch costs of the satellite.

AMSAT, working with ARRL, highlighted the educational merit of the project including the incorporation of Fox-1 into the ARRL Teacher Institute seminars. ARRL also provided a letter of support for the project that was a key component of our proposal. NASA will select from all of the submissions and announce the winning projects by January 30, 2012.

The Powerpoint presentations from the 2011 AMSAT Space Symposium on the Project Fox web site provide a good overview of the technical progress: <http://www.amsat.org/amsat-new/fox/>

- + Fox-1 Project Overview
- + Fox-1 Mechanical Design
- + Fox-1 Thermal Design
- + Fox-1 Radiation Environment

[ANS thanks AMSAT President Barry Baines, WD4ASW, and AMSAT's Project Fox Engineering team for the above information]

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SB SAT @ AMSAT \$ANS-352.02
ARRL Teachers Institute Plans Satellite Demo on December 20

AMSAT News Service Bulletin 352.02

>From AMSAT HQ SILVER SPRING, MD.
December 18, 2011
To All RADIO AMATEURS
BID: \$ANS-352.02

Satellite operators are invited to listen for ARRL Education and Technology Program Director, Mark Spencer, WA8SME on the afternoon pass of AO-27 (and possibly other satellites) on December 20 as he conducts an operating demonstration from the ARRL Teachers Institute at Mississippi State University. Satellite passes on December 21 are planned as backup operating times.

Mark will be covering topics regarding using space-borne systems in the classroom. He says a major part of that unit is demonstrating ham satellite contacts.

Mark will be using the call W1AW/5 for the pass. If you'd like a QSL for the contact, send an e-mail to him (mspencer@arrl.org) and he will make sure you get one.

Find out more about the ARRL Teachers Institutes on-line at:
<http://www.arrl.org/teachers-institute-on-wireless-technology>.

[ANS thanks Mark Spencer, WA8SME for the above information]

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SB SAT @ AMSAT \$ANS-352.03
AMSAT Awards

AMSAT News Service Bulletin 352.03
>From AMSAT HQ SILVER SPRING, MD.
December 18, 2011
To All RADIO AMATEURS
BID: \$ANS-352.03

AMSAT Director Contests and Awards, Bruce Paige, KK5D0 says that congratulations are in order for the latest AMSAT Awards recipients.

The following have entered into the Satellite Communicators Club for making their first satellite QSO.

- + Jackson Wilson, KF5LOQ
- + Bill Caton, WD4DHJ
- + Marcelo Teruel, IK0US0
- + Mike Massell, KD0LMB
- + Kelly Bradley, KC5YPU
- + Dmitry Krylov, UA3RAB

The following have earned the AMSAT Communications Achievement Award.

- + Bill Caton, WD4DHJ, #546

The following have earned the AMSAT Sexagesimal Communications Achievement Award.

- + Wyatt Dirks, AC0RA, #162
- + George Carr, WA5KBH, #163

The following have earned the South Africa Satellite Communications Achievement Award.

- + Bill Caton, WD4DHJ, #US175
- + Dmitry Krylov, UA3RAB, #US176
- + Marcelo Teruel, IK0US0, #US177

The following have earned their Robert W. Barbee, Jr. W4AMI Award

+ Wyatt Dirks, AC0RA, #75

To see all the awards visit <http://www.amsat.org>.

Bruce also invites everyone to check into the Houston AMSAT Net on Wednesday 0200z (Tuesday evening in North America) on Echolink - Conference *AMSAT* The net also streams MP3 at: <http://www.amsatnet.com> And a podcast can be downloaded from <http://www.amsatnet.com/podcast.xml> or iTunes.

[ANS thanks Bruce Paige, KK5D0 for the above information]

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SB SAT @ AMSAT \$ANS-352.04

This Week 50 Years Ago: OSCAR 1 in Orbit

AMSAT News Service Bulletin 352.04

>From AMSAT HQ SILVER SPRING, MD.

December 18, 2011

To All RADIO AMATEURS

BID: \$ANS-352.04

The AMSAT News Service is re-running the Project OSCAR Newsletters to commemorate the 50th anniversary of OSCAR 1. During the November/December 2011 time frame you will be able to share the excitement of the launch campaign that started it all 50 years ago.

This week is the last installment in the replay of these historic newsletters.

The Newsletters were hand-typed back in 1961. Thanks to Don Ferguson, KD6IRE for scanning the original documents announcing OSCAR 1.

<Begin Commemorative Message>

O S C A R N E W S L E T T E R

December 21, 1961

As of December 19, 1961 (one week in orbit) the amateur radio satellite Oscar I had completed 104 revolutions about the earth on a North-South-North orbit. Reports are beginning to pour into the Oscar Headquarters. A total of 296 reports from 11 foreign countries have been received, with radio messages indicating more are on the way. Mail has been delayed because of the Christmas rush, but it is hoped that future reports will reach us more rapidly. Reports have proven to be consistent and accurate enough for use in generating tracking predictions. Telemetry information provided by the keying rate indicates that Oscar I is running a fever. Recent data establishes the temperature of the package to be 125°F.

The following is a summary of the Oscar 1 satellite:

- + Frequency: Approximately 144.983 Mc. Power Output: 100+ milliwatts
- + HI-rate: Proportional to temperature. (10 HI's in 30 seconds 064°F).
- + Tumble rate: Approximately 20 seconds.
- + Apogee: (Point farthest from the earth) - Approximately 275 miles.
- + Perigee: (Point closest to the earth) - Approximately 150 miles.
- + Orbital Period: Approximately 92 minutes.
- + Total Doppler Shift: Approximately 6.5 kc. (Frequency received is higher than transmitted when satellite is approaching your station;

- lower when going away).
- + Transmitter: Transistor crystal oscillator on 72.5 mc., transistor amplifier and "Veri-cap" diode doubler to 145 mc. Keyer consists of transistor multi-vibrator and counters with diode logic. Oscillator is keyed in base circuit.
 - + Power Supply: Mercury batteries. Expected life of batteries: 3 to 4 weeks.
 - + Antenna: 1/4-wave monopole, about 19 inches long.
 - + Dimensions and weight: 12" x 10" x 8". Weight: 10 pounds.

All daytime passes are from North to South: All nighttime passes are from South to North. A preliminary review of a sample of reports for one pass provides some interesting information. The acquisition times and fade-out times correlate closely among all the receiving stations in the same area. Further, the correlations have improved noticeably for the later orbital passes. This emphasizes that operators are gaining experience and that the predictions have been sufficiently accurate to permit early acquisition.

Many amateurs have been surprised at the great range which may be spanned by this beacon, whose output power is about 1/4 that required to light a flash-light bulb. Reports indicate reliable reception up to a distance of about 1400 miles from the satellite path. On an overhead pass, signal reports of 40 decibels above noise level are common!

The Oscar Data Reduction group has reported a few messages indicating 'that the last dot of the letter "I" has been missing. Anybody noticing this who has a tape recording of the "missing dot" is requested to air mail it to the Association as soon as possible.

Reports of the "HI" rate are urgently requested. If the temperature inside the package continues to rise, it is possible that the operating life of Oscar could be cut short by a high temperature failure of some component. The temperature rise does not seem linear, so all reports will be welcome! Also, please monitor the frequency in off-hours to determine if Oscar can be heard by unusual propagation modes at great distances!

Orbital data is being broadcast by W1AW (see QST for schedules) and by the Voice of America "Space-Warn" program on various frequencies (9.525, 11.79, 11.83, and 15.29 mc) at 0330 GMT, Monday through Saturday.

Send all reception reports of Oscar to: Project Oscar Association, Box ---, Sunnyvale, California, U.S.A.
Thanks for your splendid cooperation and keep up the good work! 73.

<End of Commemorative Message>

[ANS thanks Don Ferguson, KD6IRE and Project OSCAR for the above information]

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SB SAT @ AMSAT \$ANS-352.05
Silent Key: Ignacio Martinez, CE2MH, President of AMSAT-CE

AMSAT News Service Bulletin 352.05
>From AMSAT HQ SILVER SPRING, MD.
December 18, 2011
To All RADIO AMATEURS
BID: \$ANS-352.05

AMSAT received the sad news that Ignacio Martinez, CE2MH, President of AMSAT-CE passed away suddenly December 9 after a brief illness. He was 73. Ignacio was founder of FEDERACHI, the Chilean Radio Amateur Federation, from where he laid the foundations to create AMSAT-CE.

There he served as President of the Board from its beginnings in 1992 until he passed away. He was the driving force behind the CESAR-1 satellite project to which Tom Clark, K3IO made a great contribution.

Ignacio is survived by his wife Patricia, two daughters and a son. A memorial service took place in Vina del Mar on Sunday, December 11. (Book of Condolences is posted at <http://www.amsat.cl/>)

[ANS thanks Axel Kruuse, CE3AFC and Oscar Cabello, CE3AFX for the above information]

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SB SAT @ AMSAT \$ANS-352.06
N1JEZ Adapts AMSAT-UK FUNCube Dongle as SDR Panadaptor

AMSAT News Service Bulletin 352.06
>From AMSAT HQ SILVER SPRING, MD.
December 18, 2011
To All RADIO AMATEURS
BID: \$ANS-352.06

AMSAT member, Mike Seguin, N1JEZ is active on the microwave bands in addition to his amateur satellite activities. Mike is A0-7's control station.

Mike wrote and presented a paper, "A Panadapter for the FT-817" at Microwave Update 2011 where he describes using the AMSAT-UK FUNCube Dongle SDR receiver adapted for use as a panadapter display.

Mike is active on 10 GHz and above, using his FT-817 as the IF rig on 144 and 432 MHz with microwave transverters. The FT-817 having a common 68.33 MHz IF (for VHF and UHF) in its receiver fits within the 64 MHz to 1700 MHz range of the FUNCube dongle.

In his paper Mike describes how to find the location to tap the common IF and an active buffer/isolation amp so as to minimize any interaction with the radio.

A copy of Mike's paper and a link to sources of the PC Boards can be found on the W1GHZ Small Projects Page:
http://www.w1ghz.org/small_proj/small_proj.htm

Find out more about the FUNCube Dongle at:
<http://www.funcubedongle.com/>

[ANS thanks Mike Seguin, N1JEZ for the above information]

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SB SAT @ AMSAT \$ANS-352.07
Soyuz Preparations Continue for Three Ham Crew Launch to ISS

AMSAT News Service Bulletin 352.07
>From AMSAT HQ SILVER SPRING, MD.

December 18, 2011
To All RADIO AMATEURS
BID: \$ANS-352.07

NASA astronaut Don Pettit KD5MDT, Russian cosmonaut Oleg Kononenko RN3DX and Dutch astronaut Andre Kuipers, PI9ISS continue preparations for their planned Soyuz launch to the ISS on on December 21 at 0816 EST (1316 GMT). The SpaceFlightNow web site posted a photo album of the ISS Expedition 30 crew this week during inspections and fit checks in the seats: <http://spaceflightnow.com/station/exp30/111209fitcheck/>

The European Space Agency has released a video of Andre Kuipers' mission which can be viewed at:
<http://spaceflightnow.com/station/exp30/kuipers.html>

The Soyuz TMA-03M spacecraft will be encapsulated in the aerodynamic shroud and then mated to its rocket booster next week in preparation for rollout to the launch pad on December 19. After launch the Soyuz will fly a two-day trek to rendezvous with the station for a planned automated docking December 23 at 1020 EST (1520 GMT).

These three hams are headed for a half-year mission aboard the ISS as members of Expeditions 30 and 31.

[ANS thanks SpaceFlightNow.com for the above information]

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SB SAT @ AMSAT \$ANS-352.08
UNISEC Announces Second Micro/Nano-Satellite Technology Idea Contest

AMSAT News Service Bulletin 352.08
>From AMSAT HQ SILVER SPRING, MD.
December 18, 2011
To All RADIO AMATEURS
BID: \$ANS-352.08

Japan's University Space Engineering Consortium (UNISEC) announced the second Mission Idea Contest for micro/nano-satellite technology sponsored by the University of Tokyo.

The Mission Idea Contest was established in 2011 to provide aerospace engineers, college students, consultants, and anybody interested in space with opportunities to present their creative ideas and gain attention internationally. The primary goal of this contest is to open a door to a new facet of space exploration and exploitation.

The contest has two categories for entry:

- + Mission Idea and Satellite Design which is open for any individual, group or company with suitable space systems expertise and an enthusiasm for micro/nano-satellites.
- + Mission Idea and Business Model which is open for any individual, group or company with suitable business expertise and an enthusiasm for micro/nano-satellites.
- + The abstract deadline is May 1, 2012.

Finalists will be invited to present in Japan at the 4th Nano-satellite symposium in Nagoya, Japan on October 10-13, 2012. Awards will be announced at a later date. Selected papers will be published in a peer-reviewed journal to provide high visibility for winning ideas

and the potential for future collaboration and support for missions.

UNISEC has posted information about the contest at:
<http://www.spacemic.net/>

AMSAT-UK posted the news at:
<http://www.uk.amsat.org/2011/12/13/nanosat-mission-idea-contest/>

[ANS thanks University Space Engineering Consortium (UNISEC) for the
above information]

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SB SAT @ AMSAT \$ANS-352.09
Satellite Shorts From All Over

AMSAT News Service Bulletin 352.09
>From AMSAT HQ SILVER SPRING, MD.
December 18, 2011
To All RADIO AMATEURS
BID: \$ANS-352.09

- + Playing this link too often may lead to additional coal in your stocking ... hum along as the NOAA Weather Radio voice (ahem) sings "Deck the Halls":
<http://www.youtube.com/watch?v=0GJbkQulQw&feature=0are>
- + While you're recovering from the first video watch: "A Ham's Night Before Christmas" at:
<http://www.youtube.com/watch?v=09REVC4dtc>
- + Trevor, M5AKA says the ARRL has kindly given permission to put some of the OSCAR 1 articles from the February 1962 edition of QST on the AMSAT-UK website. Links are at the bottom of this article:
<http://www.uk.amsat.org/2011/12/12/50th-anniversary-of-oscar-1/>
- + Eric, F4EJW announced a new website, AAR29/SAT, where he and Remy, F1NNI provide an online log sharing resource for each of the amateur satellites in service. Go to Eric's blog link, then click on the Amateur Radio Satellite AAR29 banner:
<http://f4ejw.over-blog.com/>
- + XU, CAMBODIA. A group of JA operators plan to be active from Sihanoukville between January 14-22. Operators mentioned are Masumi/JA3AV0 (XU7AV0), Takeo/JA3BZ0 (XU7AEN), Kunio/JA1CJA/JH3LSS (XU7CJA), Tsuguya/JA3UJR (XU7UJR), Shozo/JA3HJI (XU7HJI pending) and Tatsuo/JA3ARJ (XU7ARJ pending). Activity will probably be on 160-6 meters using CW, SSB and Digital modes. Also look for satellite activity on 2m and 70cm. QSL via their home call signs. (Ohio/Penn DX Bulletin No. 1040, December 12, 2011)
- + You can see more details and hear more of the mission plans of these CubeSats:

Delfi-n3Xt video
http://www.youtube.com/watch?v=04rw_BGtaI&feature=0are

University of Montana's Explorer-1[Prime]
<http://www.youtube.com/watch?v=0STzHXv9LY&feature=0are>
- + Southgate ARC's web has posted an excellent resource page called, "Working the SSB satellites". There are several links describing the techniques required for SSB operation as compared to operating

via the FM satellites: <http://tinyurl.com/blul4eb> (Southgate)

- + George, KA3HSW reported there was a typo in the Topr.txt file as received from the A0-27 control team: The second line of the file, which defines the transponder "on" period, should read 420, not 240. You can edit the file yourself with your favorite text editor, or download a corrected version of the file from the A0-27 scheduler website: <http://sites.google.com/site/ao27satellitescheduler>.
- + A Cuban TV news crew filmed Hector, C06CBF satellite demonstration for high school students and teachers in Cienfuegos City, Cuba. This was broadcast by the national TV in Cuba and now a lot more hams are interested in satellites. Hector posted his TV video at: <http://www.youtube.com/watch?v=0-mbrlVQXI&feature=outu.be>
XE1SOV posted a video from his end of a contact with C06CBF at: <http://www.youtube.com/watch?v=0i7vRJK28M>
- + AMSAT's Keeper of the Keys, Ray Hoad, WA5QGD reports that Space-Track has assigned the following catalog numbers to the satellites launched on October 28:

Cat#	Name
-----	-----
37850	COSMOS 2251 DEB (boaster)
37851	Dice 1
37852	Dice 2
37853	RAX-2
37854	AUBIESAT-1
37855	HRBE (formerly EXP1 Prime renamed for William H. Hiscock, HRBE Hiscock Radiation Belt Explorer)

- + The UK Tech Podcast, FrequencyCast, has released a short video showing reception in Essex of FM voice and an SSTV image from the amateur radio satellite ARISSat-1. The 145.950 MHz FM signal was recorded at 1055 UT on the November 14, 2011. Watch at: http://www.youtube.com/watch?feature=player_embedded&v=0Sbj-ga20A

[ANS thanks everyone for the above information]

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SB SAT @ AMSAT \$ANS-352.10

Got CubeSat? ESA January Vega Launch to Fly 6 More

AMSAT News Service Bulletin 352.10

>From AMSAT HQ SILVER SPRING, MD.

December 18, 2011

To All RADIO AMATEURS

BID: \$ANS-352.10

The January 12012 inaugural launch of the ESA Vega rocket from the ESA spaceport at Kourou in the Caribbean will carry the amateur radio microsatellite ALMASat-1 and at least 6 CubeSats. The orbit is planned for 1450 by 300 km at an inclination of 69.5 degrees.

There were slots for up to nine CubeSats on the Vega launch. Six, and possibly a seventh, satellites are ready for launch. The six that are ready to fly include:

- + Xatcobeo (a collaboration of the University of Vigo and INTA, Spain) to demonstrate software-defined radio and solar panel deployment.

- + Robusta (University of Montpellier 2, France) to test and evaluate radiation effects (low dose rate) on bipolar transistor electronic components.
- + e-st@r (Politecnico di Torino, Italy) to demonstration of an active 3-axis Attitude Determination and Control system including an inertial measurement unit.
- + Goliat (University of Bucharest, Romania) to provide imaging of the Earth surface using a digital camera and in-situ measurement of radiation dose and micrometeoroid flux.
- + PW-Sat (Warsaw University of Technology, Poland) to test a deployable atmospheric drag augmentation device for de-orbiting CubeSats. PW-Sat carries an FM to DSB amateur radio transponder with an FM input on 435.020 MHz and DSB output on 145.900 MHz.
- + MaSat-1 (Budapest University of Technology and Economics): to demonstrate various spacecraft avionics, including a power conditioning system, transceiver and on-board data handling.

ESA CubeSats delivered for first Vega flight news web page:
http://www.esa.int/esaMI/Education/SEM3L0WVUG_0.html

ESA Education - CubeSats
http://www.esa.int/esaMI/Education/SEM3N03MDAF_0.html

A picture of ALMASat-1 and the six CubeSats is posted at AMSAT-UK:
<http://tinyurl.com/c8o73zw> (uk.amsat.org)

The IARU amateur satellite frequency coordination pages hosted by AMAT-UK list the frequencies of the amateur radio satellites:
<http://www.amsat.org.uk/iaru/>

Mineo Wakita, JE9PEL provides complete coverage of the Vega launch on his 'ESA CubeSats Update' web pages. You'll find an overview of each of the satellite missions, frequencies, modulation/protocols, and links to the developers home web pages posted at:
<http://www.ne.jp/asahi/hamradio/je9pel/esa9cubf.htm>

[ANS thanks ESA, AMSAT-UK, Southgate ARC News site for the above information]

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In addition to regular membership, AMSAT offers membership in the President's Club. Members of the President's Club, as sustaining donors to AMSAT Project Funds, will be eligible to receive additional benefits. Application forms are available from the AMSAT Office. And with that, please keep in mind the size of outer space: If the Earth-Sun distance shrinks to one inch, the nearest star lies 4.3 miles away and the diameter of our galaxy is 100,000 miles at this scale.

73,
This week's ANS Editor,
JoAnne Maenpaa, K9JKM
K9JKM at amsat dot org